REMARKS

This responds to the Office Action dated August 3, 2010.

Claims 1, 18 and 21 are currently amended, claims 2 and 19 are currently or were previously canceled without prejudice or disclaimer, and claim 26 is added; as a result, claims 1, 3-18, and 20-26 are now pending in this application. Support for claim 26 is found in the specification, for example, at page 4, lines 17-20 and in Examples 1 and 2.

The Rejection of Claims Under § 102

1. Claims 1, 3, 5-8, 10, 11, 13, 17, 18 and 20 were rejected under 35 U.S.C. § 102(b) as assertedly being anticipated by Fischer et al. (U.S. Patent No. 5,697,918; hereafter "Fischer"). Applicants respectfully traverse this rejection.

Claim 1 presently recites a coupling syringe system comprising, among other things, a first syringe and a second syringe, "…wherein the first syringe and the second syringe are sized to contain a single dose…." Applicants respectfully assert that Fischer does not disclose two syringes that are both sized to contain a single dose. Indeed, Fischer teaches away from such a system, as evidenced by the requirement of a bulk storage syringe that is sized so as to be large enough for storing multiple doses (see, for example, column 2, lines 64-67 and column 3, lines 50-53). Applicants submit that single dose sizing of both syringes, as recited in amended claim 1, facilitates back and forth transfer and corresponding content mixing between the syringes in the system. Because the force required to move a syringe plunger is a function of plunger area, greater force is required to effectuate movement of the plunger in a multiple dose syringe having a relatively large plunger diameter (as in Fischer) compared to the force required to move a single dose syringe plunger. This requirement is recognized in Fischer, such as at column 7, lines 30-32 and Figures 5-10, which show multiple finger and hand requirements for generating enough force to move the plunger unidirectionally in the multiple dose bulk storage syringe.

Additionally, Applicants respectfully submit that Fischer fails to disclose a configuration for back and forth transfer of one or more compositions between the first syringe and second syringe, as presently recited in claim 1. Rather, Fischer only discloses the unidirectional transfer of a specific amount of a single composition from a bulk storage vessel into an empty dose

administration syringe (see column 4, line 19 to column 5, line 8). The dose administration syringe of Fischer is empty until the single dental composition is transferred into it, as evidenced by FIGS. 5, 6, 8, 9, 11 and 12.

Furthermore, arrows in FIG. 7 of Fischer illustrate unidirectional motion of composition 16 being dispensed from storage syringe 10 into the detachably coupled dose administration syringe 52, by advancing plunger 14 into barrel 12 of storage syringe 10 (see column 8, lines 62-65). Likewise, arrows in FIG. 10 illustrate unidirectional motion of composition 17 being drawn from storage container 60 into dose barrel 78 of dose administration syringe 72 by pulling dose plunger 82 outwardly from dose barrel 78 (see also column 10, lines 16-19). Fischer makes no mention of and teaches against transferring compositions back and forth between two syringes, as recited in Applicants' claim 1.

Thus, because Fischer fails to disclose every element of Applicants' claim 1, the reference cannot anticipate such claim. Claims 3-18 and 20 are dependent on claim 1 and are believed to be patentable over Fischer for the reasons stated above, in addition to the elements recited in such claims. Applicants respectfully request the reconsideration and withdrawal of this rejection, and the allowance of claims 1, 3-18 and 20.

The Rejection of Claims Under § 103

2. Claims 1, 3-14, 17-22 and 25 were rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over Beller (U.S. Patent No. 5,984,373[1]) in view of Fitoussi et al. (U.S. Patent No. 5,984,373; hereafter "Fitoussi"). Applicants respectfully traverse this rejection.

Applicants submit that the proposed combination of Beller and Fitoussi is improper and fails to establish all elements recited in Applicants' claims. Claim 1, for example, recites a coupling syringe system comprising, among other things, a first syringe including a first syringe tip with an integral male end portion and a locking ring spaced from an outer surface of the male end portion, and a second syringe including a second syringe tip with an integral female end portion and one or more exteriorly protruding members adapted to detachably fit the locking ring of the male end of the first syringe. The Office Action recognizes that Beller fails to recite a

[1] Applicants initially point out that the Beller document was referred to in the rejection as U.S. Patent No. 5,984,373. However, Applicants believe the correct U.S. Patent Number is 5,425,580 and respectfully request confirmation by the Examiner.

locking ring rotatable around the male luer for attaching to exteriorly protruding members on a female luer (Office Action at page 5), and attempts to rely on Fitoussi to establish this missing element. Applicants submit for numerous reasons, however, that no legally sufficient motivation exists to combine the teachings of Beller and Fitoussi to make the specific combination recited in Applicants' claims.

First, the proposed combination of Beller and Fitoussi would destroy the operability of such references for their respective intended purpose[2] or, at the very least, require substantial redesign and manufacturing changes.[3] The Office Action asserts it would have been obvious to use the locking ring and threads of Fitoussi to modify the male/female connection taught by Beller to "provide a fluid tight connection" between two different medical devices. To this end, Applicants submit that the addition of a locking ring to the first syringe of Beller, which includes an internal mixing chamber, would result in a syringe member that can no longer be efficiently manufactured using injection molding techniques.[4] The only way of combining the "locking ring" structure of Fitoussi with the first syringe of Beller, while still utilizing injection molding techniques, would be to eliminate the presence of the internal mixing chamber, thereby inhibiting the stated objective[5] of Beller. For instance, Beller recites:

> The invention has an object of providing apparatus for preparing a dosage form for echo contrast media which . . . . [is] achieved according to the invention by the apparatus . . . comprising a syringe and a mixing chamber which is unreleasably connected thereto.
>
> The mixing chamber is preferably tubular and has mixing elements in its inner lumen. In a preferred embodiment, the mixing elements are designed in the form of spikes, that is to say the mixing elements preferably stand at right angles to the inner wall of the mixing chamber.

(Beller at column 1, line 60 – column 2, line 10; column 2, lines 23-28)(emphasis added.)

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[2] According to the Federal Circuit in *McGinley v. Franklin Sports Inc.*, "[i]f references taken in combination would produce a 'seemingly inoperative device,' we have held that such references teach away from the combination and thus cannot serve as predicates for a *prima facie* case of obviousness." 262 F.3d 1339, 60 USPQ2d 1001, 1010 (Fed. Cir. 2001)(emphasis added).

[3] According to the CCPA in *In re Ratti*, the suggestion to combine references must not require substantial reconstruction or redesign of the references to arrive at the claimed invention. 270 F.2d 810, 123 USPQ 349 (CCPA 1959)(emphasis added).

[4] At column 2, lines 58-60, Beller recites:

> [T]he mixing chamber [of the first syringe] is produced by the injection moulding [British English] process and connected unreleasably to the connecting piece of a convention syringe.

[5] According to the Federal Circuit, prior art may be considered not to teach an invention particularly when the stated objective(s) of such art reinforce an interpretation. *WMS Gaming Inc. International Game Tech.*, 184 F.3d 1339, 51 USPQ2d 1385 (Fed. Cir. 1999).

Since the locking ring structure of Fitoussi and the mixing chamber's spike (or other transversely-extending) structures of Beller would overhang one another in the direction two halves of an injection mold would necessarily open and close if used, (i.e., parallel to the longitudinal axis of the syringe), such structures cannot both be present and still allow for the non-destructive removal of an injection molded syringe member. In light of the fact the two-halves of an injection mold move up and down, parallel to the syringe axis, when opened and closed, Beller appears to recite the importance that syringe elements do not overhang one another in the direction of mold opening. For instance, Beller recites:

> There is preferably a mutually offset helical arrangement of the mixing elements.
>
> It appears expedient, for reasons of production technique, to fabricate the mixing chamber from three parts, that is to say from the tubular sleeve 2 with the mixing elements 3 and the two connecting pieces 4, 5 and to connect in a suitable manner.

(Beller at column 2, lines 32-34; column 4, lines 8-13, *see*, *in conjunction*, FIG. 1)(emphasis added.) By offsetting the mixing elements in a helical arrangement and/or separating the first syringe into multiple, distinct pieces,[6] injection molding can be made possible. Because the proposed combination of Beller and Fitoussi would destroy the operability of such references for their respective intended purpose or, at the very least; require substantial redesign and manufacturing changes, Applicants respectfully request reconsideration and allowance of the claims.

Second, the cited reference portions of Beller and Fitoussi, neither alone nor in combination, teach or suggest all of Applicants' claimed elements. To this end, Applicants submit that in contrast to the Office Action's assertion, Beller fails to disclose certain aspects of the claimed invention beyond a first syringe having a locking ring (*See* Office Action at page 5). Claims 1 and 21, for example, presently recite a syringe system comprising, among other things, both first and second syringe plungers being configured to move to a position at the distal end of the respective syringe. Stated differently, the plungers are configured to move all the way to the distal ends of the syringes to effectuate complete back and forth transfer of the compositions thereby providing a mixed composition. In contrast, Beller recites a mixing chamber non-

[6] Syringes including multiple, distinct pieces are in direct contrast with Applicant's claimed integral syringes. *See*, *e.g.*, Applicants' claim 1.

detachable from a first syringe that does not allow a plunger to move to the distal end of the syringe. For instance, Beller clearly recites:

> The invention therefore relates to apparatus for preparing a dosage form from micro bubble echo contrast media comprising a first syringe and a mixing chamber which is unreleasably connected thereto.

(Beller at column 2, lines 13-16; emphasis added.) Beller expressly requires the use of a mixing chamber including transversely-oriented mixing elements between a first syringe and a second syringe, as is clearly indicated in the statement:

> [The stated] objects [of Beller] are achieved according to the invention by the apparatus for preparing a dosage form for echo contrast media comprising a syringe and a mixing chamber which is unreasably connected thereto and contains a predetermined amount of gas, plus a second syringe . . . The mixing chamber is preferably tubular and has mixing elements in its inner lumen.
>
> In a preferred embodiment, the mixing elements are designed in the form of spikes, that is to say the mixing elements preferably stand at right angles to the inner wall of the mixing chamber and thus point in the direction of the long axis of the mixing chamber tube.

(Beller at column 2, lines 7-29; emphasis added). Due to the perpendicularly-oriented mixing elements, a first syringe plunger of Beller is precluded from fully advancing to a distal end position of such syringe near a male end portion (as claimed by Applicants), thereby leaving waste in the mixing chamber. Fitoussi does not remedy these deficiencies of Beller. Applicants thus respectfully request withdrawal of this rejection under 35 U.S.C. § 103(a) and the allowance of claims 1, 3-14, 17-22 and 25.

3. Claims 15-16 and 23-24 were rejected under 35 U.S.C. § 103(a) over Beller in view of Fitoussi, in further view of Cha et al. (U.S. Patent No. 5,701,717[7]; hereafter "Cha"). Applicants respectfully traverse this rejection.

In addition to the deficiencies and lack of legal motivation to combine Beller and Fitoussi discussed above in light of Applicants' claim language, Applicants further submit that there is insufficient legal motivation to combine Cha with such references, particularly with Beller.

[7] Applicants initially point out that the Cha document was referred to in the rejection as U.S. Patent No. 5,701,717; however, Applicants believe the correct U.S. Patent Number is 5,702,717 and respectfully request confirmation by the Examiner.

Beller expressly requires the use of a mixing chamber including transversely-oriented mixing elements between a first syringe and a second syringe, as is clearly indicated in the statement:

> [The stated] objects [of Beller] are achieved according to the invention by the apparatus for preparing a dosage form for echo contrast media comprising a syringe and a mixing chamber which is unreleasably connected thereto and contains a predetermined amount of gas, plus a second syringe.... The mixing chamber is preferably tubular and has mixing elements in its inner lumen.
>
> In a preferred embodiment, the mixing elements are designed in the form of spikes, that is to say the mixing elements preferably stand at right angles to the inner wall of the mixing chamber and thus point in the direction of the long axis of the mixing chamber tube.

(Beller at column 2, lines 7-29; emphasis added). Due to the perpendicularly-oriented mixing elements, a first syringe plunger of Beller is precluded from fully advancing to a distal end position of such syringe, thereby leaving waste in the mixing chamber.

As recognized by the Office Action, Cha suggests the mixing of leuprolide acetate, poly(DL-lactide-co-glycolide) polymer and N-methyl-2-pyrrolidone. Applicants submit that leuprolide acetate is a very expensive drug and its dosage is closely regulated by the Food and Drug Administration (FDA). Even very small amounts of waste of leuprolide acetate would be troubling for at least two reasons. First, any waste would result in misuse of an expensive medicament. Second (and more importantly), because leuprolide acetate is a potent drug that must be administered in a narrow dosage range, the FDA would not approve a device for its mixing or delivery that resulted in a delivery of an uncertain amount of the drug. Other medicaments (e.g., poly(DL-lactide-co-glycolide) polymer and N-methyl-2-pyrrolidone) that the Applicants' direct coupling syringe system is intended to mix may also have the characteristics of being expensive and/or having a dosage closely regulated by the FDA. To be used with these medicaments, the coupling syringe system must not result in a significant loss, which teaches against using the syringe system of at least Beller.

Indeed, Applicants respectfully assert that the suggestion to combine Beller and Cha appears to inappropriately originate from Applicants' application.[8] Because there is no objective motivational evidence of record for the Office Action's assertion that it would have been obvious

[8] The Federal Circuit has held that an invention is not obvious when the suggestion to combine references comes from an applicant's patent application. *See ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984).

to combine Beller and Cha, Applicants respectfully request withdrawal of this rejection under 35 U.S.C. § 103(a) and the allowance of claims 15-16 and 23-24.

CONCLUSION

Applicants respectfully submit that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the undersigned at (612) 371-2106 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402--0938
(612) 371-2106

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By /Karen Himmel Ohlfest/
Karen Himmel Ohlfest
Reg. No. 58,663